

## United States Patent [19]

Palmaz

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[54] EXPANDABLE INTRALUMINAL GRAFT, AND METHOD AND APPARATUS FOR IMPLANTING AN EXPANDABLE INTRALUMINAL GRAFT

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[58] Field of Search ..... 604/93, 49, 343, 97; 623/2; 128/344, 343, 1 R

## [56] References Cited

## U.S. PATENT DOCUMENTS

3,774,596	11/1973	Cook	604/266
3,868,956	3/1975	Alfidi et al.	604/266
3,882,845	5/1975	Bucalo	128/1 R
3,889,685	6/1975	Miller et al.	128/348
4,140,126	2/1979	Choudhury	604/266
4,141,364	2/1979	Schultze	604/266
4,183,102	1/1980	Guiset	3/1.4
4,299,226	11/1981	Banks	604/266
4,318,410	3/1982	Chin	
4,416,028	11/1983	Erikson et al.	604/266
4,425,908	1/1984	Simon	
4,483,339	11/1984	Gillis	
4,483,340	11/1984	Fogarty et al.	128/344
4,503,569	3/1985	Dotter	3/1.4
4,512,338	4/1985	Balko	
4,553,545	11/1985	Maass	
4,560,374	12/1985	Hammerslag	604/49
4,562,596	1/1986	Kornberg	604/266
4,564,014	1/1986	Fogarty et al.	
4,577,631	3/1986	Kreamer	128/334 R
4,580,568	4/1986	Gianturco	604/266
4,619,261	10/1986	Guerriero	604/97

4,650,466 3/1987 Luther ..... 604/266

## FOREIGN PATENT DOCUMENTS

0483372 4/1986 European Pat. Off. .  
1205743 9/1970 United Kingdom ..... 128/343  
2135585 9/1984 United Kingdom .

## OTHER PUBLICATIONS

"Flexible Balloon-Expanded Stent for Small Vessels—Work in Progress", Duprat et al., Radiology, Jan 1987, vol. 162, No. 1, pp. 276-278.

"Expandable Intraluminal Graft: A Preliminary Study"; Radiology, Jul. 1985; Paper Presented at 70th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Nov. 25, 1984 by Julio C. Palmaz et al.

"Percutaneous Endovascular Stents: An Experimental Evaluation"; Wright et al., Radiology 156; 1985.

"Transluminal Expandable Nitinol Coil Stent Grafting: Preliminary Report Dotter et al.; Radiology 147; 1983.

"Non Surgical Placement of Arterial Endoprostheses: A New Technique Using Nitinol Wire"; Cragg et al., Radiology 147, 1983.

"Transluminally-Placed Coilspring Endarterial Tube Grafts"; Dotter Investigative Radiology; Sep.-Oct. 1969.

"Radiological Follow-Up of Transluminally Inserted Vascular Endoprostheses: An Experimental Study Using Expanding Spirals"; Radiology 152; 1984.

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[57]

## ABSTRACT

An expandable and deformable intraluminal vascular graft is expanded within a blood vessel by an angioplasty balloon associated with a catheter to dilate and expand the lumen of a blood vessel. The graft may be a thin-walled tubular member having a plurality of slots disposed substantially parallel to the longitudinal axis of the tubular member.

43 Claims, 2 Drawing Sheets

